

The following Listing of the Claims replaces all prior Listings of the Claims within this application.

LISTING OF THE CLAIMS

Claims 1 – 25 (Cancelled)

Claim 26 (Currently amended) A method of fabricating a substrate comprising:

forming a porous Si-containing region ~~having a~~ via electrolytic anodization of a Si-containing region having n-type or p-type dopant porosity of about 0.01% or greater in an upper portion of a Si-containing substrate;

forming a single crystal Si-containing layer directly on top of said porous Si-containing region by epitaxial deposition;

forming an oxygen implant region by implanting oxygen ions into ~~at least~~ the porous Si-containing region, wherein a peak oxygen content is provided by the implanting of the oxygen ions, and is located within said porous Si-containing region or at an interface between said single crystal Si-containing layer and said porous Si-containing region; and

annealing using a thermal oxidation process at a temperature at which said implanted oxygen ions precipitate ~~[[precipitates]]~~ as oxides, wherein said precipitated oxides combine to form a uniform buried oxide layer extending across an entirety of a semiconductor-on-insulator (SOI) substrate, wherein after the annealing~~[[,]]~~ portions of the porous Si-containing region located beneath said uniform buried oxide layer now contain voids created by a collapse of previously existing pores in the porous Si-containing region, wherein a variation of thickness of said uniform buried oxide layer across said entirety of said Si-containing substrate is less than

30% of a total thickness of said uniform buried oxide layer, and wherein a Si-containing over-layer is formed from a remaining portion of said single crystal Si-containing layer.

Claims 27-28 (Cancelled)

Claim 29 (Previously presented) The method of Claim 26, further comprising annealing said silicon-on-insulator (SOI) substrate in a hydrogen containing ambient after said thermal oxidation process, wherein a level of dopant atoms in said Si-containing over-layer is reduced during said annealing in said hydrogen containing ambient.

Claim 30 (Previously presented) The method of Claim 26, wherein an oxygen dose of about $1\text{E}17$ atoms/cm² or less is employed during said implanting of said oxygen atoms, and wherein said uniform buried oxide layer has a thickness of about 100 nm or less.

Claim 31 (Currently amended) A method of fabricating a substrate comprising:

forming a porous Si-containing region ~~having a~~ via electrolytic anodization of a Si-containing region having n-type or p-type dopant a porosity of about 0.01% or greater in an upper portion of a Si-containing substrate;

forming a single crystal Si-containing layer directly on top of said porous Si-containing region by epitaxial deposition;

forming a plurality of patterned oxygen implant regions by implanting oxygen ions into at least the porous Si-containing region, wherein a peak oxygen content is provided by the implanting of the oxygen ions, and is located within said porous Si-containing region or at an

interface between said single crystal Si-containing layer and said porous Si-containing region;
and

annealing using a thermal oxidation process at a temperature at which said implanted oxygen ions precipitate [[precipitates]] as oxides, wherein said precipitated oxides combine to form a plurality of buried oxide islands, in which a variation in thickness of the buried oxide islands across an entire width of the buried oxide islands is less than 30% of a total thickness of the buried oxide islands, wherein after the annealing, portions of the porous Si-containing region located beneath said plurality of the buried oxide islands now contain voids created by a collapse of previously existing pores in the porous Si-containing region, wherein a Si-containing over-layer is formed from a remaining portion of said single crystal Si-containing layer, and wherein said porous Si-containing region abuts said single crystal Si-containing layer around said plurality of the buried oxide islands.

Claim 32-33 (Cancelled)

Claim 34 (Currently amended) The method of Claim [[33]] 31, further comprising annealing said silicon-on-insulator structure in a hydrogen containing ambient after said thermal oxidation process, wherein a level of dopant atoms in said Si-containing over-layer is reduced during said annealing in said hydrogen containing ambient.

Claim 35 (Currently amended) The method of Claim [[33]] 31, wherein an oxygen dose of about $1\text{E}17$ atoms/cm² or less is employed during said implanting of said oxygen atoms, and wherein said uniform buried oxide layer has a thickness of about 100 nm or less.

Claim 36 (Currently amended) A method of fabricating a substrate comprising:

forming a porous Si-containing region ~~having a~~ via electrolytic anodization of a Si-containing region having n-type or p-type dopant having a porosity of about 0.01% or greater in an upper portion of a Si-containing substrate;

forming a single crystal Si-containing layer directly on top of said porous Si-containing region by epitaxial deposition;

forming at least one oxygen implant region by implanting oxygen ions into at least the porous Si-containing region, wherein a peak oxygen content is provided by the implanting of the oxygen ions, and is within said porous Si-containing region or at an interface between said single crystal Si-containing layer and said porous Si-containing region; and

annealing using a thermal oxidation process at a temperature at which said implanted oxygen ions precipitate ~~[[precipitates]]~~ as oxides, wherein said precipitated oxides combine to form a uniform buried oxide region during said annealing, wherein some pores in said porous Si-containing region collapse into voids beneath the uniform buried oxide regions during said annealing, wherein after the annealing, portions of the porous Si-containing region located beneath said uniform buried oxide layer now contain voids created by a collapse of previously existing pores in the porous Si-containing region, and wherein a Si-containing over-layer is formed from a remaining portion of said single crystal Si-containing layer to provide a semiconductor-on-insulator (SOI) substrate.

Claim 37-40 (Cancelled)

Claim 41 (Previously presented) The method of Claim 36, further comprising annealing said semiconductor-on-insulator (SOI) substrate in a hydrogen containing ambient after said thermal oxidation process, wherein a level of dopant atoms in said Si-containing over-layer is reduced during said annealing in said hydrogen containing ambient.

Claim 42 (Previously presented) The method of Claim 36, wherein an oxygen dose of about $1\text{E}17$ atoms/cm² or less is employed during said implanting of said oxygen atoms, and wherein said uniform buried oxide layer has a thickness of about 100 nm or less.